ORIGINAL

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OF COUNSEL TO
MUNGER CHADWICK, P.L.C.

ADMITTED TO PRACTICE IN:
ARIZONA, COLORADO, MONTANA,
NEVADA, TEXAS, WYOMING,
DISTRICT OF COLUMBIA

Arizona Corporation Commission
DOCKETED
AUG 15
DOCKETED BY

August 14, 2007

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

RECEIVED
2007 AUG 15 A 10:51
AZ CORP COMMISSION
DOCKET CONTROL

Re: Red Rock Utilities, L.L.C.
Docket No. WS-04245A-07-0363

To Whom It May Concern:

Enclosed for filing in the above-referenced docket are fourteen (14) copies of a Draft Design Report as prepared by WestLand Resources, Inc.

Thank you for your assistance.

Sincerely,

Angela R. Trujillo

Angela R. Trujillo
Secretary
Lawrence V. Robertson, Jr.

LAWRENCE V. ROBERTSON, JR.
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ADMITTED TO PRACTICE IN:
ARIZONA, COLORADO, MONTANA,
NEVADA, TEXAS, WYOMING,
DISTRICT OF COLUMBIA

August 10, 2007

Linda A. Jaress
Executive Consultant III
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Re: Red Rock Utilities, L.L.C.
Docket No. WS-04245A-07-0363

Dear Ms. Jaress:

With reference to the response under the Paragraph No. 3 portion of my August 9, 2007 letter to you in connection with the July 13, 2007 Sufficiency Letter issued in the above-captioned proceeding, enclosed is the Draft Design Report prepared by WestLand Resources, Inc. on behalf of Red Rock Utilities, L.L.C. Concurrently, copies of the same are being mailed to Docket Control (14 copies), Del Smith, Chief Administrative Law Judge Lyn Farmer and Brian Bozzo.

The transmittal of the enclosed Draft Design Report completes Red Rock Utilities, L.L.C.'s responses to the information requests set forth in the July 13, 2007 Sufficiency Letter.

Please let me know if you have any questions regarding the enclosed information.

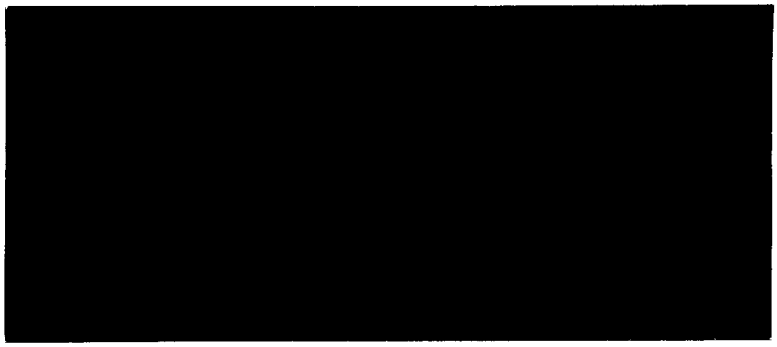
Sincerely,

Lawrence V. Robertson, Jr.

cc: Docket Control
Del Smith
Lyn Farmer
Brian Bozzo

C:\Documents and Settings\Angela Trujillo\Larry\Red Rock Utilities\07-0363\Jaress ltr 8-10-07.doc

Red Rock Utilities, L.L.C.
Docket No. WS-04245A-07-0363



WestLand Resources, Inc.
Engineering and Environmental Consultants

DRAFT

DESIGN REPORT

VERANO
WATER PLANT NO. 1

Prepared for:

RED ROCK UTILITIES, LLC
c/o Bob Iannarino
2200 E. River, Suite 115
Tucson, Arizona 85718
(520) 577-0200

Prepared by:

WESTLAND RESOURCES, INC.
2343 E. Broadway Boulevard, Suite 202
Tucson, Arizona 85719
(520) 206-9585

AUGUST 2007
Project No. 498.25 A 8000

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INTRODUCTION

This report describes the design criteria for the new Verano Water Plant No. 1 reservoir, well, and booster station, which will serve Phases I and II of the Verano Development. The new Water Plant No. 1 reservoir, well, and booster pump station will be located in Section 10, Township 16 South, Range 14 East. The new 750,000-gallon reservoir will be filled by two wells, one onsite and one offsite at Well No. 2. The Verano development single zone distribution system will be served through a booster station that withdraws directly from the new reservoir. The booster station will be controlled by pressure within the water system. The interim Phase I condition will have a booster design capacity of 2,500 gallons per minute (gpm) and will be upgraded to 3,300 gpm at buildout.

WATER SYSTEM DEMAND

Water system usage and peaking requirements for interim and build-out conditions were calculated in the Verano Water System Master Plan prepared by WestLand Resources, Inc. (WestLand) in August 2007 (Appendix A). Demand criteria from the Master Plan used for this project are shown in Table 1.

Table 1. Verano Water Demands for Phase I and Buildout

Interim Condition	Total Units	ADD (gpm)	PDD (gpm)	PHD (gpm)	Fire Flow Requirement (gpm)	Storage Requirement (gallons)	Booster Requirement (gpm)
Phase I	1,984	409	818	1,308	1,500	769,248	1- 2,318
Buildout	8,526	1,930	3,860	6,176	2,000	3,019,742	2- 3,300

(ADD) Average Daily Demand	1.0 ADD
(PDD) Peak Day Demand	2.0 ADD
(PHD) Peak Hour Demand	3.2 ADD

RESERVOIR DESIGN

The Phase I reservoir is sized according to Arizona Department of Environmental Quality (ADEQ) Engineering Bulletin No. 10 criteria and the Arizona Administrative Code, Title 18 (R18-5-503). The total storage requirement is based on providing a storage volume equal to a minimum of ADD for a multiple well system, plus the fire flow for the appropriate duration. The reservoir is sized to provide the storage capacity for Phase I ADD plus fire flow of 1,500 gpm for two hours, resulting in a total capacity of 769,248 gallons.

The new reservoir will be a 750,000-gallon welded steel tank, constructed according to American Water Works Association (AWWA) D-100. The additional capacity of approximately 19,248 gallons for Phase I will be included in the future 750,000 gallon reservoir at the same site. The new reservoir will be approximately 94 feet in diameter and 16 feet high. A new onsite well will fill the reservoir through an 8-inch top feed inlet on the new reservoir. The reservoir will also be served by an offsite well via a new 8-inch main connecting directly from the well site to the reservoir. A 16-inch outlet connects to the suction manifold of the pump station. The reservoir will be provided with a 16-inch overflow line, a 6-inch drain, and a 24-inch screened roof vent.

BOOSTER STATION CAPACITY AND PUMP SIZING

The minimum capacity of the booster station is approximately to serve Phase I is 2,318 gpm, to provide PDD plus fire flow for Phase I. The minimum capacity of the booster station is calculated to be 2,500 gpm. The pump design capacities for the booster station are shown in Table 2.

Table 2. Booster Pump Station Design Capacities

Interim Phase I		Buildout	
Pump No.	**Pump Flow (gpm)**	**Pump No.**	**Pump Flow (gpm)**
1	425	1	425 **
2	425	2	425 **
Future	-	3	800 *
4	800	4	800 **
5	850	5	850 **
Total	**2,500**	**Total**	**3,300**

*New Pump ** Same pump that was used in Phase I

In the interim, Phase I booster configuration pumps 1, 2, 3, and 4 will serve initial construction demand, fire flow and new homes. Pump 3 will be added as ADD increases during the buildout of Verano.

BOOSTER STATION PRESSURE SETTINGS

The elevation of the booster station site is estimated at approximately 2,753 feet, and the high water elevation of the pressure zone is 2,940 feet. The static lift of the booster station is 175 feet, based on the high water elevation of 2,940 feet and a suction tank high water elevation of 2,765 feet (assumes tank is 4 feet low). The high water elevation was set approximately 100 feet above the highest elevation to be served. The elevation change within the area to be served (2,710 to 2,845 feet) results in higher pressures at the bottom of the zone than a standard 105-foot pressure zone. The higher pressure within the lower portion of the pressure zone (pressures greater than approximately 80 psi) require that individual pressure-reducing valves (PRVs) be provided to protect the private plumbing of the homes. Homes lower than an elevation of 2,756 will need to be protected by individual PRVs.

In order to account for head losses in the manifold piping, additional headlosses were added as discharge flow increases. The actual total dynamic head (TDH) of the pumps will vary as the pumps move throughout their operating range. The design operating points of the booster pumps account for static lift plus head loss through the discharge manifold piping (Table 3). Manufacturers pump curves for the selected operating points showing the minimum and maximum operating TDH anticipated for the pumps are included in Appendix B. The selected pumps will be 30 and 60 horsepower units.

Table 3. Booster Station Operating Points
Interim Phase I

Pump No.	Design Flow at Average Pressure (gpm)	Horsepower	On (feet)	Average (feet)	Off (feet)	Shut-off Head (feet)	High Pressure Cut-off (feet)
1	425	30	156	177 (2)	198	230	210
2	425	30	156	179 (4)	197	230	
Future	-	-	-	-	-	-	
4	800	60	151	183 (6)	193	215	
5	850	60	152	185 (10)	193	215	

(Discharge manifold losses added to operating points)

Discharge pressures for the booster pump station are based on the pressure in the water system on the discharge side of the pumps. The pumps are constant speed and will operate between the on-off pressure settings listed in Table 4.

Table 4. Booster Station On-Off Settings

Pump No.	On (psi)	Off (psi)
1	72	90
2	71	89
Future	-	-
4	68	86
5	66	84

Pumps 1, 2, and 3 will provide average to peak hour flows. Pumps 4 and 5 will provide fire flow.

OTHER DESIGN CRITERIA

The booster pump station suction and discharge manifolds will be 20-inch. At the anticipated peak flow rates, suction and discharge laterals were designed to provide velocities between 3 and 5, and 5 and 7 feet per second, respectively. The suction and discharge lateral sizing for each pump is listed in Table 5. The pump station will include a 10-inch flow meter.

Table 5. Pump Lateral Sizes

Pump No.	Pump Flow (gpm)	Suction Manifold (inches)	Discharge Manifold (inches)
1	425	6	6
2	425	6	6
3	800	10	8
4	800	10	8
5	850	10	8

The discharge piping will connect to a 5,000-gallon, 150-pound per square inch (psi) hydropneumatic tank for surge and pressure control.

WELL PUMP DESIGN

Two new wells will be equipped to pump into new 12-inch water mains for delivery into the new onsite 750,000-gallon reservoir. One production well will be drilled at the same site as the reservoir and booster station and a second production will be drilled offsite. The wells will be designed to meet ADEQ and AWWA standards. The new production wells currently have not been drilled. Detailed well design cannot be done until the wells have been drilled and pump tested.

APPENDIX A

VERANO WATER SYSTEM MASTER PLAN

VERANO

WATER SYSTEM MASTER PLAN

Prepared for:

RED ROCK UTILITIES, LLC
2200 E. River, Suite 115
Tucson, Arizona 85718
(520) 577-0200

Prepared by:

WESTLAND RESOURCES, INC.
2343 E. Broadway Boulevard, Suite 202
Tucson, Arizona 85719
(520) 206-9585

AUGUST 2007
Project No. 498.25

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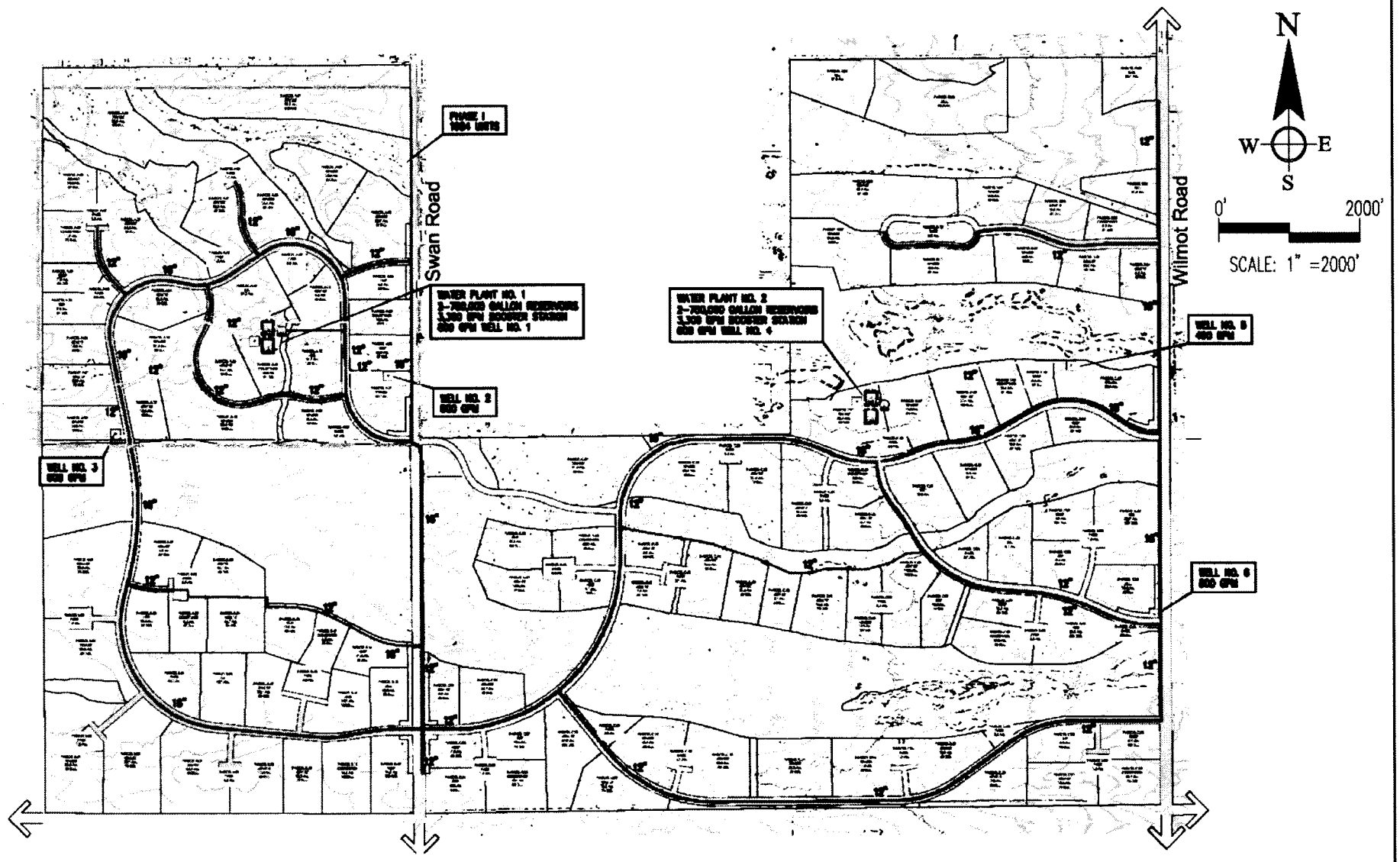
INTRODUCTION

The purpose of this master plan is to describe the required water system facilities to serve the proposed Verano development. This master plan will provide the basis for design of the new facilities. The master plan will discuss the operational method, proposed demands, and proposed facilities for service by Red Rock Utilities.

PROPOSED SERVICE AREA

This property will be served by Red Rock Utilities. The proposed service area to be established by a Red Rock Utilities is located within Sections 10, 12, 13, 14, and 15 of Township 16 South, Range 14 East. The service area slopes toward the northwest, within an elevation range of 2,710 to 2,845 feet, which will allow the area to be served by a single pressure zone. A typical water system pressure zone covers an elevation range of approximately 100 feet. Homes in the lower end of the zone would require individual pressure reducing valves, as the pressure at these lots would be above the 80 pounds per square inch (psi) maximum pressure requirement. Figure 1 represents the property being served by Red Rock Utilities.



VERANO

Red Rock Utilities
Proposed Water Infrastructure
Figure 1

August 15, 2007

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

m:\projects\408.28\10-26-06\overall-water-layout-8-03-07.dwg August 15, 2007 mark study

WATER SYSTEM REQUIREMENTS

Demand criteria was estimated to determine the required water system facilities to meet source, storage, and booster station requirements. The following are the engineering criteria used to determine the sizing of the various facilities.

DEMAND CRITERIA

The demand criteria for the proposed single- and multi-family residential units, schools, mixed use areas, and parks in the master plan are based on standard engineering practice for master planning in the Tucson area, most of which is based on usage rates, residency rates, and peaking factors determined from Arizona Department of Water Resources (ADWR) and Tucson Water data. Residential demand criteria include construction and lost and unaccounted for water demands. The criteria for the proposed water system are as follows:

- Average number of persons per single-family (SF) dwelling unit 2.7
- Average number of persons per multi-family (MF) dwelling unit 1.9
- Average daily per unit water usage for SF residential dwelling unit ..... 110 gallons per day (gpd)
- Average daily per unit water usage for MF residential dwelling unit ..... 90 gpd
- Average daily water usage for elementary school use ..... 25 gallons per student per day (gpsd)*
  *Assumes 1,050 students per school
- Average daily per acre water usage for mixed use ..... 1,500 gpad
- Average daily per acre water usage for commercial ..... 2,000 gpad
- Average daily per acre water usage for parks ..... 500 gpad
- Ratio of peak-day to average-day use 2.0
- Ratio of peak hour to average day 3.2

PROPOSED SYSTEM DEMANDS

The estimated total number of residential units was determined from a proposed land use plan provided by Greey Pickett. The land use density was used to determine the number of residential units. Water usage for the planned schools, parks, and mixed use areas was determined based on the acreage dedicated to those areas. Park irrigated turf areas are assumed to be served by reclaimed water. Potable demands for parks are assumed to be bathrooms and water fountains.

Average Daily Demand (ADD) SF Residential = 7,671 units x 2.7 persons/unit x 110 gallons = 2,278,287 gpd = 1,582 gallons per minute (gpm)

ADD MF Residential =855 units x 1.9 persons/unit x 90 gallons/person-day = 146,205 gpd = 102 gpm

ADD Schools = 3 Elementary Schools (45 acres) x 1,050 students/school x 25 gal/student-day = 78,750 gpd = 55 gpm

ADD Mixed Use = 106 acres x 1,500 gallons/acre-day = 159,000 gpd = 110 gpm
ADD Commercial = 35.5 acres x 2,000 gallons/acre-day = 71,000 gpd = 49 gpm
ADD Parks = 93 acres x 500 gallons/acre-day = 46,500 gpd = 32 gpm
Total ADD = 2,779,742 =1,930 gpm
Peak Daily Demand (PDD) = 2 x ADD = 2 x 1,930 gpm = 3,860 gpm
Peak Hour Demand (PHD) = 3.2 x ADD = 3.2 x 1,930 gpm = 6,176 gpm

STORAGE CRITERIA

Two water reservoir and booster station sites are anticipated. Providing two separate water plants is preferable due mainly to engineering and operational considerations. To avoid a single major outage of one plant site that can leave a large population without any water service, redundancy in water plants is extremely important when serving large populations. Also, the sizing of water facilities to serve initial phases usually results in the need to phase facilities over a period of time. The reservoirs are sized according to Arizona Department of Environmental Quality (ADEQ) Engineering Bulletin No. 10 criteria and the Arizona Administrative Code. The total reservoir storage requirement is based on providing a storage volume equal to a minimum of 1.0 times the average day of the peak month, unless the water system has multiple wells. Since this system is proposed to have multiple wells, a storage requirement of 1.0 times the ADD plus the additional storage volume required to provide fire flow for the appropriate duration, will be used. The required storage capacity for ADD is approximately 2.8 million gallons (MG). Since schools are planned, a minimum fire flow requirement of 2,000 gpm for two-hour duration is required. The required fire flow is estimated to be 2,000 gpm for two-hour duration or 240,000 gallons, for a total storage capacity requirement of 3.0 MG. Each of the two water plants will have two 750,000-gallon storage reservoirs.

The placement of the two water plant sites allows for flexibility in development phasing. Depending on where development begins, each water plant at ultimate capacity can serve up to 3,000 units before the second is in operation if the appropriate water distribution system is in place. The order in which the water plants are built is irrelevant because they are both sized to serve an equal amount of units. It is recommended that both water plants have a backup generator for system reliability. Estimated water plant site size is approximately 2.0 acres based, which allows additional space for a treatment facility if necessary.

WELL SOURCE CRITERIA

The total well production (source) requirement for the water system is based on meeting PDD for the service area with the largest well out of service. The required well capacity is equal to PDD or 3,860 gpm. The development has planned to meet source water requirements by utilizing four 800-gpm wells, one 600-gpm well, and one 490 gpm well to serve the buildout PDD, which includes an additional emergency backup well. Well No. 1 located at the Water Plant No. 1 reservoir site is planned to be 600 gpm, Well No. 2 is planned for 490 gpm at a location remote from the reservoir site, with water being delivered into the reservoir via low pressure feed line. Well Nos. 3 through 6 are planned to have a

capacity of 800 gpm each. The final locations of the wells sites will be determined by individual well impact studies at the time of permitting. Once a well has been drilled, the water quality will need to be tested to determine if water treatment is required. If arsenic or other treatment is required to meet water quality standards, the water will either be blended, if possible, or treated at the water plant locations. Estimated well site size is 100 feet by 100 feet which includes space for electrical equipment and a 5,000 gallons hydropneumatic tank for surge protection.

BOOSTER STATION CRITERIA

The total booster station capacity requirement is based on providing PHD, or PDD plus fire flow, whichever is larger. For the buildout of the proposed development, the total booster station requirement is calculated at 6,176 gpm based on PHD. Each water plant site will have a minimum capacity of 3,300 gpm booster station based on being able to provide fire flow to the extreme portion of the property. The booster station would most likely be vertical turbine pumps connected to an aboveground discharge manifold and a backup generator.

DISTRIBUTION SYSTEM CRITERIA

The design criteria for the distribution system is generally to size and arrange the distribution lines to provide the required PDD plus fire flow or PHD, whichever is greater, in accordance with ADEQ requirements. The maximum friction head loss for lines up to and including 8 inches in size is to be 8 feet per 1,000 feet or less. Head loss for lines over 8 inches in size is to be two to five feet per 1,000 feet or less, according to pipe size. New 12-inch pipeline loops will be required to convey PDD plus fire flow through out the development. New 16-inch mains will connect Water Plant No. 1 to Water Plant No. 2, and also convey fire flow and large peak hour demands to distant areas within the system to reduce losses because of the distance between the water plants.

In accordance with the requirements described above, infrastructure has been proposed to create the water system. The proposed wells will pump directly into the new 750,000-gallon reservoirs. New booster pump stations at each of the water plant sites will provide PHD into the water system. Pumping the wells directly into a reservoir increases the efficiency of the well by allowing it to pump for long periods of time to fill the reservoir rather than turning off and on with demand.

APPENDIX A

OPINION OF PROBABLE CONSTRUCTION COST

OPINION OF PROBABLE CONSTRUCTION COST

Project Name:	Verano				
Project No.	498.25 A 8000	**Prepared by:**	KLW	**Date:**	8/7/07
Location:	Sections 10,12, 13, 14, and 15, Township 16 South, Range 14 East	**Checked by:**	MFT	**Date:**	8/7/07
Description:	Water System Master Plan	**Client:**	Red Rock Utilities, LLC		

Item No.	Item Description	Unit	Quantity	Unit Price	Amount	Remarks
	Phase I					
1	12-inch water main	LF	11,800	$75	$885,000	Includes valving, air releases, and fittings
2	0.75 MG reservoir	LS	1	$570,000	$570,000	Water Plant No. 1, Assumes 1,500 gpm fire flow requirement for Phase I
3	3,300 gpm booster station	LS	1	$650,000	$650,000	Water Plant No. 1
4	New 800-gpm well (onsite)	LS	1	$550,000	$550,000	Water Plant No. 1, Well No. 1, assumes cable tool drilling.
5	Site work, block wall, and piping	LS	1	$100,000	$100,000	Water Plant No. 1
6	New 800-gpm well (offsite)	LS	1	$700,000	$700,000	Includes site work, block wall, and onsite piping, Well No. 2, assumes cable tool drilling.
7	12–inch well transmission main	LF	6,000	$75	$450,000	Well collection system
8	16-inch water main (DIP)	LF	9,000	$100	$900,000	Includes valving, air releases, and fittings
	Subtotal				$4,805,000	
	~20% Engineering, Contingencies, & Permits				$979,375	
	Total Phase I				**$5,784,375**	Assumes no additional water treatment is necessary

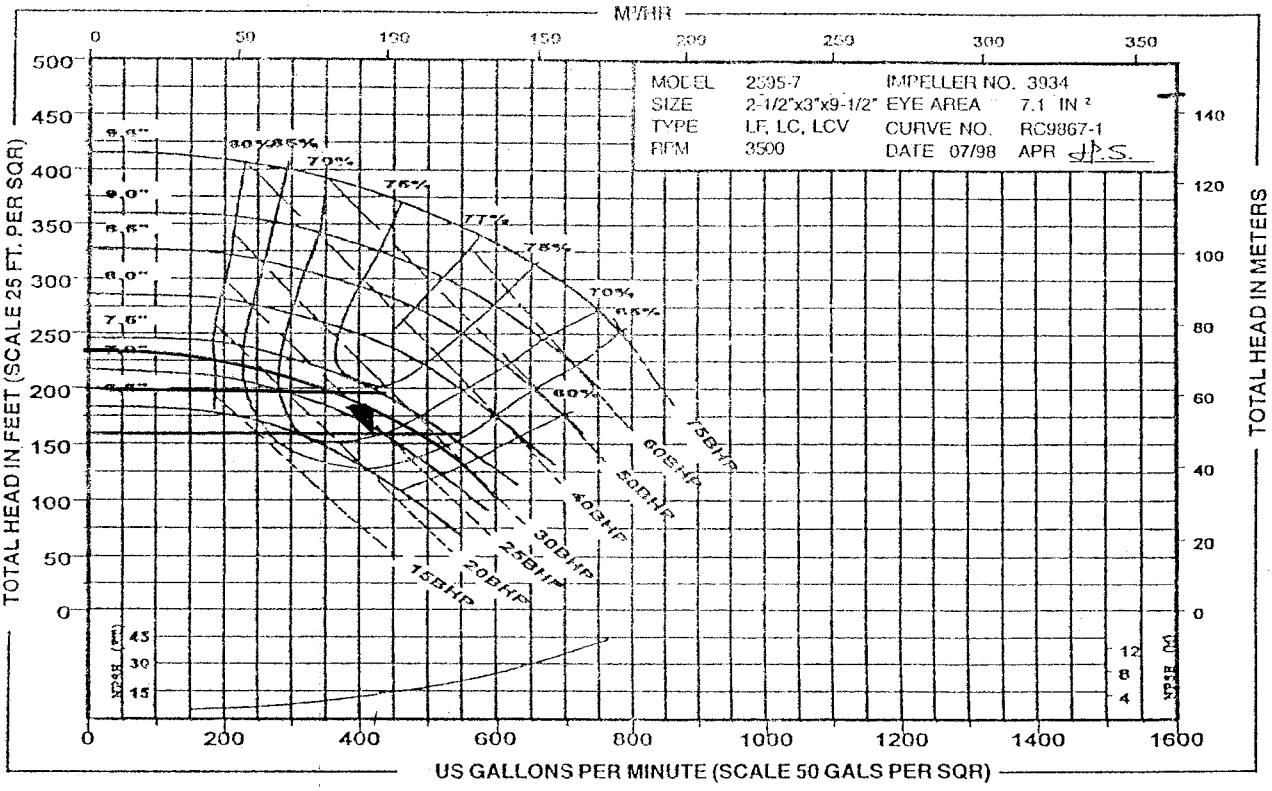
Note: All costs exclude rock excavation and 3-phase electrical requirements.

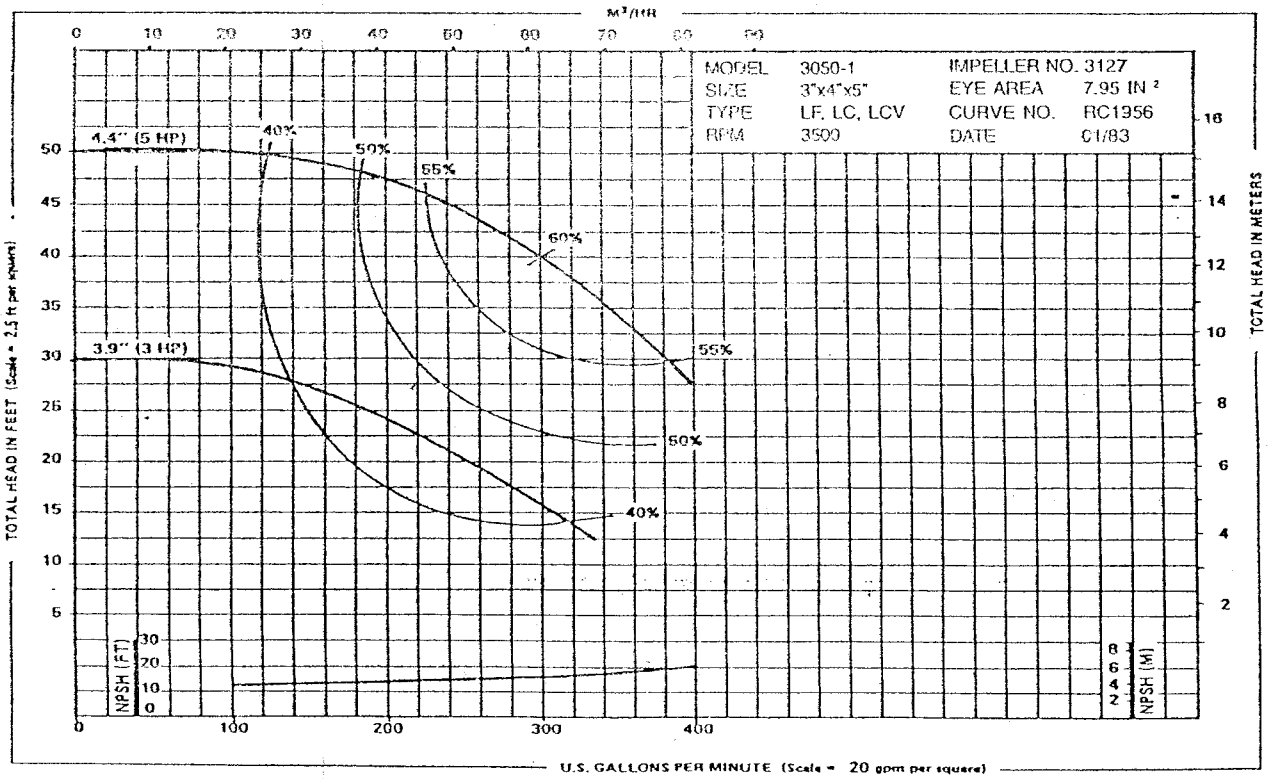
APPENDIX B

BOOSTER PUMP CURVES

PERFORMANCE CURVES 3500 RPM

Pumps 1 & 2 30HP





5WB - 3600 RPM

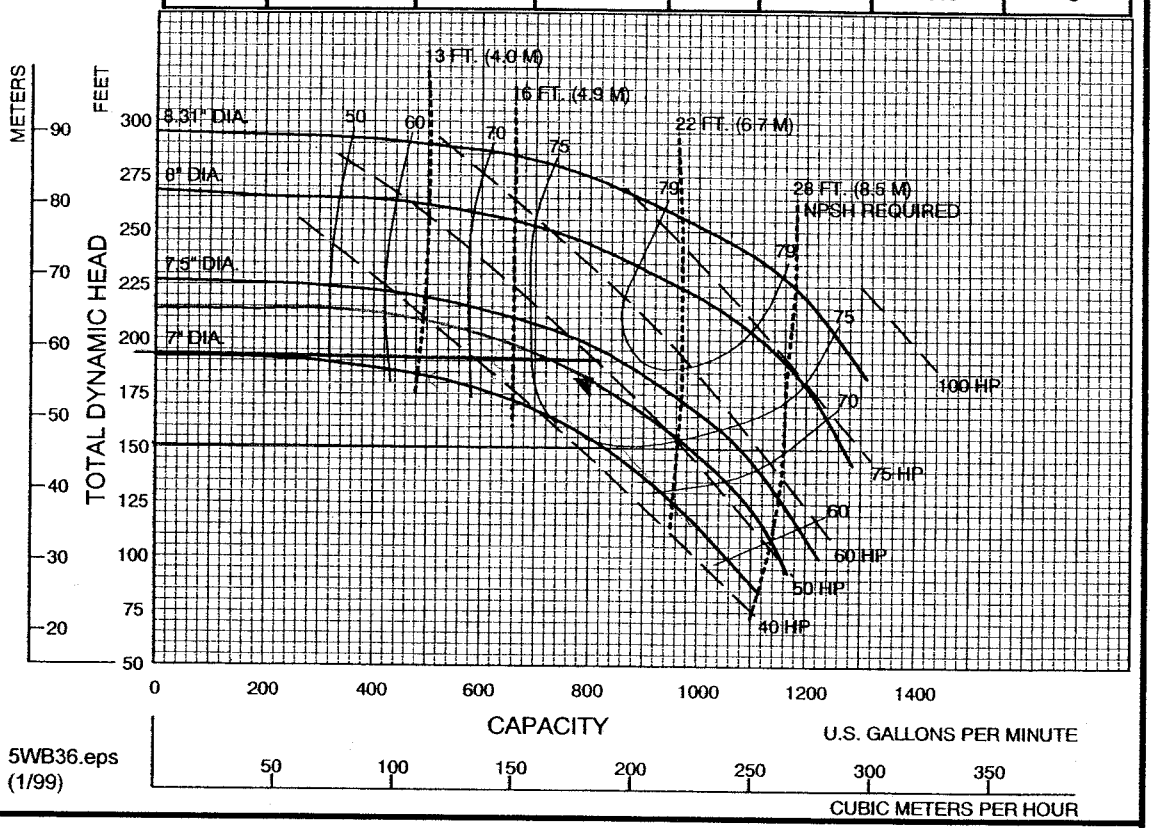
SINGLE VOLUTE

Speed	Impeller Dia	Style	Solids Dia	N_S	Suction	Discharge	No. Vanes
3560	Various	Enclosed	0.97"	1821	6.0	5.0	6

Max. Impeller Dia. Non-overloading		
HP	Full Motor Load 1.0 S.F.	Full Motor Load 1.15 S.F.
100	8.31"	
75	8.19"	8.31"
60	7.62"	8.00"
50	7.25"	7.56"
40	6.75"	7.12"

Performances shown are for cool water, horizontal frame configuration with packing. Other mounting styles or liquids may require horsepower and/or performance adjustments.

Feet x .305 = Meters
Inches x 25.4 = Millimeters
GPM x .227 = Cubic Meters/Hour
GPM x 3.785 = Liters/Minute
HP x .746 = KW



5WB36.eps
(1/99)

Varano Water Pump Sizing, Settings, and Operating Points

System High Water	**2940**
Site Elevation	**2753**
Suction High Water	**2765**

		feet	psi
Static Head =Sytem HW - site elevation		187	81
Suction Head =Suction HW - Site Elevation		12	5
System/manifold Loses	Pump 1	2	1
System/manifold Loses	Pump 2	4	2
System/manifold Loses	Pump 3		
System/manifold Loses	Pump 4	6	3
System/manifold Loses	Pump 5	10	4
TDH (Static Head - Suction Head + Losses)		177	77

		Pressure Settings (psi)			
Pump	Design Capacity	ON	OFF	High Alarm	High Cut-off
1	425	72	90	93	98
2	425	71	89		
3	-	69	87		
4	800	68	86		
5	850	66	84		

				Pump Operating Points (feet)					
Pump	Design Capacity	Min Eff.	RPM	Average TDH	ON	OFF	High Alarm	High Cut-off	Shutoff
1	425	70	3600	177	156	198	205	210	230
2	425	70	3600	179	156	197			230
3	-		3600	-	-	-			-
4	800	75	3600	181	151	193			215
5	850	75	3600	185	152	193			215